 ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of	)	
Federal-State Joint Board on Universal Service	)	CC Docket No. 96-45
Forward-Looking Mechanism For High Cost Support for Non-Rural LECS	)	CC Docket No. 97-160

REPLY COMMENTS OF BELL ATLANTIC
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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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The wide variety of proposed changes to the proxy model's input values points to a fundamental failing of the model approach – it can be made to reach any pre-determined conclusion merely through manipulation of the inputs. As Bell Atlantic and other commenters demonstrated, the Commission's proposed inputs systematically understate actual forward-looking costs. In addition, the model is wildly inaccurate at the wire center level, and it shifts large amounts of high cost support to a narrow range of states. Despite years of effort and the devotion of enormous resources by the Commission and interested parties, the model still is far too unreliable to be used to distribute universal service support.

[1] The Bell Atlantic telephone companies ("Bell Atlantic") are Bell Atlantic-Delaware, Inc.; Bell Atlantic-Maryland, Inc.; Bell Atlantic-New Jersey, Inc.; Bell Atlantic-Pennsylvania, Inc.; Bell Atlantic-Virginia, Inc.; Bell Atlantic-Washington, DC, Inc.; Bell Atlantic-West Virginia, Inc.; New York Telephone Company and New England Telephone and Telegraph Company.

Given the short time available for preparing reply comments, Bell Atlantic will focus here primarily on the comments of AT&T and MCI/WorldCom, who continue to advocate unrealistically low and unsupported input values.[2] To the extent those or any other commenters advocate input values that would produce lower costs than the inputs proposed in the Further Notice, those arguments should be rejected.

I. There Still Is Nothing In The Record To Show That The Proxy Model Accurately Identifies The Forward-Looking Costs Of Serving Each Area.

The wide variety of comments on input values demonstrate one thing – that the proxy model can produce any pre-determined result simply through manipulation of the inputs. Because the model constructs a purely hypothetical network, it allows the use of cost inputs that do not represent the actual costs of any carrier, and that can be based on personal opinion and pure speculation, rather than ascertainable fact. The inherently arbitrary nature of this process previously caused regulators to abandon the "replacement cost" method of ratemaking, which also seeks to determine the hypothetical costs of reconstructing new facilities from scratch. ***See, e.g.,*** J. Bonbright et al., Principles of Public Utility Rates 212 (2d ed. 1988). Such methodologies produce interminable battles between experts who give opinions "on things that never happened and estimates requiring the projection of the engineer's imagination into the future and methods of construction and installation that have never been and never will be adopted." Missouri

[2] ***See also*** Attachment A, which rebuts certain miscellaneous input values proposed by AT&T and MCI/WorldCom.

ex rel. Southwestern Bell Tel. Co. v. Public Serv. Comm'n, 262 U.S. 276, 300 (1923). This makes it highly unlikely that the end result of the proxy model process will represent the actual forward-looking costs of any carrier providing universal service. Accordingly, it will not achieve the Commission's stated goal of determining the amount of high cost support that is needed to preserve universal service in each area.

As Bell Atlantic demonstrated in its comments, the model produces wildly inaccurate line counts and loop lengths at the wire center level, and it skews high cost support to a small number of states at the expense of consumers in the rest of the country. ***See*** Bell Atlantic at 3-4 & Attachment A. SBC showed (at 1-4) that the model substantially understates SBC's actual investments in each state. US West, one of the original, and most ardent, supporters of proxy models, has had "no choice but to withdraw all support for the proxy model," arguing (at 62-70) that the model's output has no relationship to the actual costs of providing universal service. BellSouth presented substantial evidence that the model produces costs "that cannot be and are not indicative of the forward-looking cost of any particular entity." BellSouth at 4, Attachment A. Even AT&T and MCI/WorldCom, two of the remaining supporters of the proxy model approach, do not attest to the model's accuracy. Indeed, MCI acknowledges that "the Commission's model is a blunt, inflexible, instrument, incapable of achieving its stated goals in a rational manner." MCI Comments, CC Docket Nos. 96-45, 96-262 (filed July 23, 1999) at 18. Of course, the substantially lower cost inputs proposed by AT&T and MCI/WorldCom would only make the situation worse.

These results are due to a basic flaw in the proxy model approach – since it models the costs of a hypothetical "efficient" carrier, it allows the use of inputs that are based on pure speculation about what kind of costs could be achieved by that hypothetical carrier, despite real world evidence to the contrary. In addition, even if more reliable and conservative inputs were adopted, there is nothing in the record to show that the model would produce accurate results. Because the model only uses a small number of geographic and environmental factors to construct its hypothetical network, ignoring such real world constraints as mountains, rivers, buildings, and available rights-of-way, it will never be able to properly replicate the actual forward-looking costs of serving a particular area, and it is incapable of reliably identifying high cost areas.

For these reasons, the record is insufficient to show that it is reasonable to adopt a proxy model approach to determine high cost support. Rather than rely on a risky and unproven proxy model, the Commission should continue to rely on actual, reported costs to identify high cost states, but it should modify the high cost funding mechanism to make it portable and to disaggregate support within a state. ***See*** Bell Atlantic at 5-6.

II. Bell Atlantic's Costs Of Installing A New Central Office Switch Are Far Higher Than The Commission's Proposed Inputs.

In its comments, Bell Atlantic demonstrated that its costs of installing a new central office are significantly higher than the results of the Commission's proposed formula for switching investment inputs. ***See*** Bell Atlantic at 10 & Attachment D. In addition, Bell Atlantic demonstrated that the Commission's formula improperly ignores the much higher costs of adding capacity to existing switches. ***See*** id. & Attachment C.

Consequently, the Commission's proposed input values for switching costs significantly understate actual forward-looking costs.

AT&T and MCI/WorldCom (at 35, 40) argue, to the contrary, that the Commission's proposed switching costs are too high, claiming that a Bell Atlantic affidavit in the Bell Atlantic-NYNEX merger proceeding stated that Bell Atlantic "could 'install'" a new 60,000 line switch for about $55 to $60 per line.[3]

Bell Atlantic's affidavit said no such thing. In that affidavit, Bell Atlantic stated that "if Bell Atlantic, or for that matter, AT&T . . . were to install a new Lucent 5ESS switch in New York City, with analog line interfaces, designed to provide 60,000 lines, the total costs of the hardware and software could be as low as $55 to $60 per line." ***See*** Attachment B, Affidavit of Nancy Sayer. Obviously, the "costs of the hardware and software" do not include all of the costs that Bell Atlantic incurs when it installs a switch, such as costs of engineering and planning, site preparation, delivery, installation, security, etc. Nor do these switch costs include the costs of the main distribution frame or power. The switch investment input for the proxy model includes all of these costs, which are capitalized and recovered over the life of the equipment through depreciation and return on capital. The Further Notice makes it clear that the switch investment input for the model is defined as the cost of the "purchase *and installation* of new switches." Further Notice, ¶¶ 151-152 (emphasis added). Indeed, the data that the Commission used to

[3] In comparison, the cost from the Commission's proposed formula would be $90.45 per line for a host switch ($447,000/60,000 + $83) and $86.11 for a remote switch ($186,400/60,000 + $83).

derive its proposed switching curve were derived from the local exchange carriers' depreciation reports, which include all of these capitalized costs.[4]

As is shown in Attachment C, once these costs are added to the costs in the Sayer affidavit, the per-line costs for a new switch are in line with the data in Bell Atlantic's comments (***see*** Bell Atlantic, Attachment D, Chart 1). AT&T and MCI/WorldCom try something similar (at footnote 77), attempting to "back-out" certain costs from the Commission's proposed switch formula for comparison to the per-line costs in the Sayer affidavit. However, AT&T and MCI/WorldCom make several errors, the most significant being their assumption that the $55 to $60 per-line cost in the Sayer affidavit includes all installation costs except local exchange carrier engineering. ***See*** Attachment C, p. 1. This mistaken assumption again demonstrates why AT&T and MCI/WorldCom's citation to the purchase price of hardware and software alone in the Sayer affidavit is completely irrelevant to the issue of the appropriate switch inputs for the proxy model.

III. AT&T And MCI/WorldCom's Proposed Costs For Digital Loop Carrier Are Unreasonably Low.

AT&T and MCI/WorldCom argue (at 32-35 & Exhibit B) that the Commission's proposed inputs for digital loop carrier are too high, citing data that they claim to have derived from the contracts that the local exchange carriers submitted to the Commission in response to a data request. However, AT&T and MCI/WorldCom again cite data that

[4] The Commission made adjustments to include the costs of the main distribution frame, power, and engineering costs in the rural utilities service data, which did not include all of the installation costs. ***See*** Further Notice, ¶¶ 157-162.

are inconsistent with the Commission's definition of the model's cost input. They cite the installed costs only for "common equipment" (such as cabinets and time slot interchangers) and omit the costs for line equipment (the fiber optic electronic line cards at the central office and the remote terminals). In contrast, the data submitted by Bell Atlantic in Attachment D, Chart 12, include *all* of the costs of digital line carrier equipment as defined in the model (and that are necessary to make fiber optics work).

The Further Notice states that "to run the model, a user must input the fixed and per-line cost for each of these DLC sizes. The total cost of a particular DLC is determined by multiplying the number of lines connected to the DLC times the per-line cost of the DLCs, and then adding the fixed cost of the DLC." Further Notice, ¶ 142. At the Commission's December 11, 1998 Workshop, the Commission staff defined these inputs as follows;

> DLC Fixed Factor = remote terminal common equipment + central office terminal common equipment + central office terminal line equipment
>
> DLC Variable Factor = remote terminal line equipment/lines available

This demonstrates that the costs of digital line carrier equipment must include both *common* and *line* equipment. However, AT&T and MCI/WorldCom's Exhibit B only includes costs for *common* equipment. For example, the Bell Atlantic equipment listed in their exhibit includes only line cabinets, hardware and common plug-ins, which are all "common" equipment. ***See*** AT&T & MCI/WorldCom Exhibit B, p. B-2. These data omit the line equipment at both the central office and the remote terminal – the electronic equipment on each end of a fiber cable required to generate and receive fiber optic transmissions. The line terminal costs clearly are critical components of total

digital line carrier costs and must be included in both the fixed and variable factors in the model's cost input. AT&T and MCI/WorldCom's inclusion of only part of the costs of digital line carrier equipment is fundamentally flawed, and their proposed cost inputs should be disregarded.

IV. The Road Surrogate Method Is Far Too Inaccurate To Be Used As The Starting Point For A Proxy Model.

Many commenters point to the Commission's proposal to use 100 percent "road surrogate" data to determine customer locations as a primary source of inaccuracy in the model's results. ***See, e.g.,*** AT&T & MCI/WorldCom at 3; SBC at 5; GTE at 39; Ameritech at 3-6. While the basic unreliability of the PNR wire center line counts and the BLR wire center boundaries undoubtedly contributes to this inaccuracy, the road surrogate methodology itself must also bear a large part of the blame. This methodology is inherently random, placing subscribers in fictional locations along roads that only by chance will approximate the actual "geocode," or vertical and horizontal coordinates, of each customer location. Therefore, even if the Commission uses the actual line counts that it receives from the local exchange carriers through its recent data request,[5] the road surrogate methodology is likely to misidentify high cost areas and skew universal service funding towards a small group of states. This flaw in the proxy model approach has no

[5] ***See*** Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, CC Docket Nos. 96-45, 97-160, DA 99-1406 (rel. July 19, 1999).

apparent fix, as no commenter has been able to point to a reliable source of actual geocode data.

AT&T and MCI/WorldCom argue that the Commission should adopt the "expedient" approach of requiring the local exchange carriers to provide actual customer location data as a condition of receiving high cost support. ***See*** AT&T & MCI/WorldCom at 4-5. The Commission should reject this proposal. Bell Atlantic, for one, does not have any geocode data, and the cost of developing it would be prohibitive. Customer names and addresses cannot simply be converted to geocode data points, as many customer addresses are not translatable to specific geographic locations (such as rural routes and multi-building accounts). Each customer address would have to be examined to determine if the resulting geocode could be considered reliable. If not, the only alternative would be to send company personnel to each customer location with geographic positioning satellite receivers. The cost of this entire process would run into the millions, and the data would quickly become obsolete as customers moved and changed services.

Moreover, the geocode data that would be generated through this process would be highly proprietary and very difficult for other parties to verify, making it unlikely that it would meet the Commission's requirement that the "model and all underlying data, formulae, computations, and software associated with the model must be available to all interested parties for review and comment."[6] Also, since each company would develop

[6] Universal Service Order, 12 FCC Rcd 8776, ¶ 250 (criterion eight).

its own data, commenters would have to evaluate numerous alternative methods of gathering geocode data, making the entire process unmanageable.

AT&T and MCI/WorldCom's simplistic proposal does not resolve a basic drawback to the proxy model approach – it requires data at a level of detail that does not, and likely will never, exist. Their proposal is nothing more than an "expedient" way of denying high cost support by blaming the local exchange carriers for the failure of the model proponents to produce the data that is needed to produce reliable, accurate results. Accordingly, the proposal should be rejected.

V. Conclusion

The Commission should not use the proxy model to determine high cost support, as there is nothing in the record to show that any proxy model is capable of accurately identifying the cost of service in each area.

Respectfully submitted,

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Dated: August 6, 1999

REPLY TO AT&T AND MCI WORLDCOM COMMENTS
ON MISCELLANEOUS INPUTS

Cost of Copper Cable – Splicing Costs

AT&T & MCI/WorldCom (at 16-19) disagree with the Commission's proposed 9.4 percent loading of copper cable investment to account for splicing costs, arguing that the loading should be no more than 4.4 percent. However, their proposal is unrealistic except for very long cable lengths. Bell Atlantic's engineering and construction records information system ("ECRIS") database produces a splicing percentage of 5 percent for very long (5,000 feet or longer) lengths of cable. Shorter lengths of cable (+/- 3,000 feet) produced splicing percentages in the 10 percent range. Still shorter lengths (< 1,000 feet) produced even greater splicing percentages. The Commission's proposal of 9.4 percent, which it derived from the Gabel and Kennedy study, is consistent with Bell Atlantic's own data and is superior to AT&T & MCI/WorldCom's proposal, which is based on speculative use of modular splicing methods.

Cable Fill Factors

There is no basis for AT&T & MCI/WorldCom's proposal (at 22-23) to increase the Commission's proposed fill factors for feeder and distribution. If anything, those fill factors are too high, as demonstrated in Bell Atlantic's comments. ***See*** Bell Atlantic, Attachment D, Chart 5. AT&T & MCI/WorldCom's statement that "distribution fill factors sufficient to provide 1.2 lines per household are more than adequate in a forward-looking cost study" is incorrect. While current demand may average 1.2 lines per household, it is next to impossible to build and administer distribution plant with exactly that number of pairs to each household. For example, if 5 households are on a street, do all 5 households share the 6^{th} pair? What happens if two of these households (a realistic possibility) decide to get second lines? To take into account practical considerations as well as customer churn, the fill factor must be significantly lower than the level needed to just equal current demand.

Structure Costs – The Costs of Underground Structure

AT&T & MCI/WorldCom (at 24) argue that the Commission should assume the use of Polyethylene Structural Foam Buried Cable Closure for manholes for distribution plant, which would reduce manhole costs by 90 percent or more. However, this type of structure would normally be associated only with buried cable (Account 2423). Because of its smaller size and lighter construction, it could not be used to satisfy the wall space requirements of main line, branch, and subsidiary conduit and the traffic load of the public way. The manholes that are priced in Attachent D in Bell Atlantic's comments are coded to the conduit account (2441). These manholes are poured concrete and are designed to withstand the traffic load in the public

way. They are of sufficient size to satisfy the wall space requirements of main line, branch and subsidiary conduit. Accordingly, the Commission should not assume the use of Polyethylene Structural Foam Buried Cable Closure except for buried cable on non-public rights of way.

Structure Costs – Distribution Plant Mix

The Commission should not accept the AT&T & MCI/WorldCom assumption (at 25) that "aerial cable is the dominant form of [distribution] cable structure in all density zones." While the lower cost of aerial structure in some circumstances is an important factor, other factors such as out-of-sight requirements, guying problems and right-of-way problems also must be taken into consideration. The Commission's recommended values for the mix of distribution plant apparently consider these factors and are much more reasonable than the AT&T & MCI/WorldCom recommendations.

Structure Costs - Structure Sharing

AT&T & MCI/WorldCom (at 28-32) disagree with the Commission's proposed values for structure sharing, arguing that they should not be based on "the incumbent LECs' embedded sharing practices." However, their claims that the local exchange carriers will be able to accomplish dramatically lower sharing percentages in the future are based on pure speculation. For instance, their argument that the modifications to the pole attachment rules in the Telecommunications Act of 1996 "show that Congress believed that at least three parties would use the incumbent LECs' outside plant structures" is both unsupported and beside the point. An "expectation" is not a fact, and there is nothing in the Act that would make it a self-fulfilling prophecy. Their argument that builders often provide free trenching in new subdivisions does not prove that such activities in the future will exceed current levels, and such trenching is limited in any event to only part of the distribution cable. Nor do AT&T & MCI/WorldCom's arguments concerning sharing of pole space with power companies indicate that amount of sharing will increase in the future – the telephone companies already share space with power companies where they can. And AT&T & MCI/WorldCom's argument that competition will motivate the local exchange carriers to reduce their costs through increased structure sharing is inconsistent with the model's assumption of a "sole provider" of service to 100 percent of demand (see, e.g., Ameritech at 20-25), and is incorrect from an economic point of view. The Commission's price cap regime already provides a strong motivation for the carriers to reduce costs by any means. Accordingly, the Commission's should not simply assume unrealistic increases in the amount of sharing that will occur in the future. Rather, the Commission should use the more realistic sharing inputs proposed in Bell Atlantic's comments, which reflect currently achievable levels. ***See*** Bell Atlantic, Attachment D, Chart 11.

Switch Costs – Offset For Digital Lines

AT&T & MCI/WorldCom argue (at 41-43) that the Commission should reduce the per-line switching investment by $30 for each line served by digital line carrier. This is based primarily on their argument that the Declaration of Nancy Sayer (submitted in association with the Bell Atlantic/NYNEX merger proceeding in 1996) shows that a digital line carrier switch port termination costs between $8 and $28 less than an analog line termination. However, AT&T & MCI/WorldCom fail to recognize that the Declaration is discussing a difference in costs based on a comparison of switch *upgrades* ("In contrast, adding capacity to an existing in-region Lucent 5ESS switch, equipped with a analog line interfaces would cost $125 per line for the hardware. If the switch were equipped with the TR303 interface needed to connect transmission equipment it would cost approximately $97 to $117 per line, depending upon the characteristics of the upgrade."). The $8 to $28 difference in costs between the analog and digital interfaces is clearly based on a job that adds capacity to an existing switch and not to an initial switch installation. Since the cost per-line of a new switch is about half the cost per-line of an addition to an existing switch, the differential for a new switch would be only about half as much. The line port utilization factor goes down when a carrier uses digital loop carrier, which also reduces the differential. In addition, AT&T takes out the cost per-line of the main distributing frame, but it fails to include the digital cross connect equipment to which the digital line carrier is connected. When all of these adjustments are taken into account, there is little difference in cost per-line between analog and digital terminations.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of the Application of Bell Atlantic Corporation and NYNEX Corporation for Consent to Transfer Control of Licenses and Authorizations	)))))	Tracking No. 96-0221

REPLY OF BELL ATLANTIC AND NYNEX TO COMMENTS IN OPPOSITION

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October 23, 1996

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
NYNEX CORPORATION,	)	
	)	
Transferor,	)	
	)	
and	)	Tracking No. 960205,
	)	960221
BELL ATLANTIC CORPORTATION,	)	
	)	
Transferee,	)	
	)	
Application for Consent to Transfer of Control	)	

DECLARATION OF NANCY SAYER

I, Nancy Sayer, on oath, state as follows:

1. I have twenty eight years' experience with Bell Atlantic in telecommunications engineering and planning. I am currently the Director - Network Design, with regional responsibilities for planning of the Bell Atlantic public switched telephone network. My responsibilities include planning and engineering Bell Atlantic central office switches and interoffice facilities, including all transport network elements.

2. In previous assignments, I had state-wide network planning and engineering responsibilities for New Jersey. In this capacity, I developed guidelines and strategies for the deployment of new technologies required for the loop, interoffice facilities, and switch networks. I developed state-wide network survivability plans and met with state and federal regulatory agencies on network engineering matters. I also developed migration strategies for the

retirement of obsolete technologies and the integration of new technologies. I had responsibility for working with interexchange carriers and cellular providers to develop network solutions that met their business requirements. I also had customer network engineering responsibility, developing specific network designs and network solutions for major Bell Atlantic customers. This affidavit is based on my personal knowledge and extensive telecommunications network engineering experience.

3. I have reviewed the Affidavit of William K. Mosca attached to the Petition of AT&T Corp. to Deny, or in the Alternative, to Defer Pending Further Investigation and Briefing, which was filed in opposition to the proposed Bell Atlantic and NYNEX merger ("Mosca Aff.").

4. Mr. Mosca asserts that Bell Atlantic's New Jersey based switch facilities are "perfectly appropriate" for serving New York City. (Mosca Aff. at ¶17). Based upon my experience and my knowledge of the Bell Atlantic network, Mr. Mosca's network planning assumptions are flawed, his suggestions for facilities deployment are irrational and his conclusions are wrong.

5. The presence of Bell Atlantic facilities in New Jersey is irrelevant to any rationally efficient and reasonably priced proposal to provide competitive local exchange services in the NYNEX region. Bell Atlantic cannot use its New Jersey facilities to serve New York, or even Manhattan, at any reasonable cost. Bell Atlantic is not better situated than AT&T, MCI, or any other carrier with facilities in place, to compete effectively in providing local exchange service in New York.

6. There are several reasons why Bell Atlantic cannot utilize its facilities in New Jersey, which serve Bell Atlantic - New Jersey customers, to provide local exchange service in the NYNEX region. First, the switches deployed in Northern New Jersey are at or near current

capacity just meeting Bell Atlantic's New Jersey customers' needs, due in large part to increasing demand for second lines, internet access, data transmission, ISDN and feature services. Second, adding switch capacity through software or hardware upgrades is demonstrably more costly than deploying new switch facilities in New York City. Third, Mr. Mosca's recommended facilities modifications are either irrational or unreasonably expensive when compared to placing facilities in New York City or elsewhere in the NYNEX region. Fourth, any network design which relies upon facilities located in New Jersey to serve local exchange customers in New York would require unreasonable inefficient transport arrangements and would generate significant network programming and customer service problems.

7. Mr. Mosca asserts that Bell Atlantic's Northern New Jersey network has "huge amounts" of excess switching capacity sufficient to serve "several million" New York customers. Mosca Aff. at ¶15. That assertion is wrong. Bell Atlantic's network engineering is based on optimal switch utilization of approximately 93% of the installed switch line capacity. The objective is to ensure that switches are upgraded or replaced on a timetable that reasonably accommodates population growth and new service deployment. Due to demands for multiple voice lines, internet access lines and data transmission lines, the switches in the Northern New Jersey central offices which are in closest proximity to Manhattan are now at 95% of current capacity.

8. Mr. Mosca claims that certain Lucent switches can handle up to 75,000 to 111,000 lines. Mosca Aff. at ¶15. Such technically feasible switch capacity requires that switch hardware and software are installed to carry such high levels of traffic. Further, demand for data transmission, multiple lines, features and internet access all consume switch capacity, and reduce the number of new voice lines which can be terminated on a switch. Since these types of

services are likely to be required by New York City customers, particularly business customers, switch capacity would be consumed at an even greater rate than presently.

9. Capacity can only be increased on a given switch by adding switch modules, and memory and processor upgrades, available only from the switch vendor. Orders for switch upgrades from Bell Atlantic's primary switch vendor, Lucent Technologies, formerly a subsidiary of AT&T, were inexplicably delayed for many months. Delivery of upgrades has now begun, but growth, in both population and demand for data, internet and other services, has not abated. In addition, recent demand forecasts have consistently been lower than the experienced demand, primarily because of the increasing use of services other than voice lines. Therefore, there is no current or anticipated excess capacity on Bell Atlantic's Northern New Jersey switches which could be redeployed to provide local exchange service in New York City.

10. Moreover, it would be far less costly for a carrier to install a new switch in Manhattan to serve New York City customers then it would be to upgrade the current capacity of Bell Atlantic's Northern New Jersey switches. The pricing structures imposed by switch vendors, including Lucent Technologies, favors the purchase of new switches, rather than switch upgrades. Vendors offer substantial discounts on new switches, but do not offer comparable discounts on switch upgrades. Since, for the most part, switch design and engineering are proprietary to the vendor, essential switch upgrades are available only from the original vendor. Since a local exchange carrier purchasing a new switch becomes dependent upon that vendor for future upgrades and modifications, there are market incentives for the vendors to price new switches attractively. No similar market incentives exist for switch upgrades. The pricing of Lucent Technologies switch upgrades, in particular, reflects this dependency upon the supplier.

11. For example, if Bell Atlantic, or for that matter, AT&T, Mr. Mosca's employer, were to install a new Lucent 5ESS switch in New York City, with analog line interfaces, designed to provide 60,000 lines, the total costs of the hardware and software could be as low as $55 to $60 per line. In contrast, adding capacity to an existing in-region Lucent 5ESS switch, equipped with a analog line interfaces would cost $125 per line for the hardware. If the switch were equipped with the TR303 interface needed to connect transmission equipment [under Mr. Mosca's scenario] it would cost approximately $97 to $117 per line, depending upon the characteristics of the upgrade. In addition to the line costs, the in-region switch would also require the purchase of digital loop carrier equipment [such as a Lucent SLC 2000 or DSC Litespan] which would increase the per line cost by, at minimum, an additional $78 to as much as $152 per line. These switch upgrade costs do not include the costs for the interoffice facilities required to provide the service under Mr. Mosca's scenario. For these reasons, it would be far more cost efficient to install a new switch, in proximity to and dedicated to the targeted customers, rather than to upgrade existing distant switches to serve those customers.

12. The manufacturer's specifications provided by Lucent support my conclusions and contradict those of Mr. Mosca. Mr. Mosca suggests that Bell Atlantic could use SLC 2000 equipment to serve New York City effectively from existing switches in Northern New Jersey. Mosca Aff. at ¶17. However, literature describing the capabilities of the SLC 2000 equipment states that a carrier would need to install multiple regeneration devices to "boost" the signal to actually reach the technically feasible distance of 125 miles. Such devices, costing $36,000 each, would be required at 51 km intervals, or approximately one every 31 miles, increasing the costs for this configuration even more. It would be less costly to install a new switch in closer proximity to the targeted customers.

13. Not only would provisioning service in New York from New Jersey switches be an irrational and costly network design, it would create technical and operational problems. Facilities, requiring electronics and fiber, would be needed to transport a call from New York to a Bell Atlantic switch in New Jersey. Then, each call placed by a New York customer served from a Bell Atlantic New Jersey switch would require facilities, including electronics and fiber, back to New York. There the call would be routed to the ultimate called destination. Even calls which are destined for the calling customer's next door neighbor would be trunked to New Jersey and back. Finally, Mr. Mosca's proposed network configuration suggests that Bell Atlantic use fiber facilities across the Hudson River for transport of calls which could easily be handled by a New York-based switch. Since these fiber facilities are so difficult and expensive to place, costly to maintain and repair if damaged, they are a valuable resource which is used sparingly.

14. Programming Bell Atlantic's northern New Jersey switches to provide E911 service and number portability to New York customers would be extremely difficult and expensive. New Jersey switches would need substantial reconfiguration to automatically route E911 calls to emergency services in New York City. In addition, Bell Atlantic would have difficulty providing New York customers with services such as Answer Call or ISDN under this scenario. Programming of usage sensitive services, which may be priced differently in the different jurisdictions, would also use up switch capacity.

15. Since no reasonable volume of New York based customers could be accommodated on just one of Bell Atlantic's Northern New Jersey switches, traffic from New York would be spread among several New Jersey switches. This would mean that each of the switches in proximity to New York would need to be upgraded and modified to properly handle this complicated New York traffic.

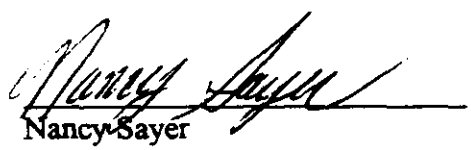
16. Mr. Mosca claims that Bell Atlantic already has transport and transmission facilities that connect its switches to a variety of points in the NYNEX region. Mosca Aff. at ¶19. Mr. Mosca bases this erroneous assertion upon a belief that Bell Atlantic's corridor facilities terminate in the NYNEX region. This is not true. Bell Atlantic does not own facilities in New York, whether used for corridor traffic or other traffic. Facilities to handle corridor traffic are owned by Bell Atlantic on the New Jersey side and by NYNEX on the New York side. Bell Atlantic would have no means of completing a local exchange call from New York City by using its corridor facilities. Bell Atlantic would be in the same position as any other carrier seeking to terminate traffic in New York: it would either build its own facilities or lease the facilities of another.[1]

17. Even a cursory assessment of the costs and complications of the switch modifications and programming requirements necessary to provide New York service from existing New Jersey facilities leads me to conclude that placement of a switch in New York, in closer proximity to the customer base, is the only rational and efficient network planning choice.

[1] Mr. Mosca's final assertion, that Bell Atlantic could send its installation and service personnel into New York to serve customers in New York, is not credible. Bell Atlantic locates its installation and repair personnel in close proximity to the customers which they serve. It would be irrational to send trucks and crews across the congested Hudson River crossings and into Manhattan traffic in order to install or repair a line. Bell Atlantic, like other carriers, would likely rely upon the personnel of the incumbent LEC.

18. For these reasons, Mr. Mosca's affidavit is not supported by the facts. It presents a flawed network analysis, based on erroneous assumptions, which lacks basic network engineering support. Mr. Mosca's conclusion that Bell Atlantic is better suited than other carriers to provide competitive local exchange service in New York City, due to network facilities in Northern New Jersey, is, quite simply, wrong.

I hereby declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct to the best of my knowledge and belief.



Nancy Sayer

Dated: October 22, 1996

AT&T and MCI WORLDCOM COMMENTS
SWITCH COSTS

In their comments on switch costs, AT&T and MCI WorldCom have misrepresented a cost included in a Declaration submitted by Bell Atlantic witness Nancy Sayer in association with the Bell Atlantic/NYNEX merger proceeding. A careful review of the declaration will indicate that the costs were presented as an example of vendor prices and not as an example of a fully installed cost as required by the proxy model input for switch investments (***see*** Further Notice, ¶ 153). Paragraph 10 of the Declaration is a discussion on vendor pricing structures and details the difference between vendor prices for new switches and vendor prices for switch upgrades. Paragraph 11 of the Declaration begins "For example," and is clearly a continuation of the discussion on vendor prices. The contrast in vendor prices for new switches versus vendor prices for switch upgrades is further illustrated in the next sentence – "In contrast, adding capacity to an existing in-region Lucent 5ESS switch, equipped with a analog line interfaces would cost $125 per line for the hardware."

The comments submitted by AT&T and MCI WorldCom imply that the cost of "as low as $55 to $60 per line" is a fully installed cost. However, the Declaration states that vendor price of the hardware and software (designed to provide service for 60,000 lines) could be as low as $55 to $60 per line. A number of costs need to be added to this material cost in order to develop a fully installed cost. These costs would include items such as telephone company engineering, installation, main distribution frame (MDF), and power. Once the appropriate loadings are applied to this material cost, the resulting fully installed cost compares favorably to the fully installed cost developed using information from Attachment D (Affidavit of Patrick Garzillo) of Bell Atlantic's comments.

The following chart develops a fully installed switch investment cost, starting with the vendor prices for a new switch in the Sayer affidavit. After adding installation costs, the MDF, and power, the cost per-line is similar to the analysis provided by Patrick Garzillo in Bell Atlantic's initial comments in this proceeding, and significantly above the Commission's proposed input for switching investment, which assumes only brand new switches.

AT&T & MCI/WorldCom attempt a somewhat similar analysis in footnote 77 of their comments, where they take the Commission's proposed investment per-line for a 20,000 line switch and try to "back into" the per-line prices in the Sayer affidavit. There are several flaws in this analysis. First, the Sayer affidavit referred to the cost of hardware and software for a 60,000 line switch, not a 20,000 line switch. Second, AT&T takes out the 8 percent for "LEC engineering," which is only one component of the costs of installing a new switch that are incorporated in the depreciation data that the Commission used to develop its switch cost curve. Installation costs include the following items that must be added to the purchase price for just hardware and software; (1) vendor engineering; (2) vendor installation; (3) delivery to the job site and placement in the building; (3) warehousing; (4) plant labor; (5) local exchange carrier engineering; and (6) other capitalized costs not directly related to material costs. The attached chart uses a loading factor of [BEGIN BELL ATLANTIC PROPRIETARY] [END BELL ATLANTIC PROPRIETARY] for installation costs, which was derived from Bell Atlantic's continuing property records, and which includes all of these

items (see p. 5). Third, AT&T & MCI/WorldCom understate the costs for power, which they take from paragraph 159 of the Further Notice, but which are significantly understated for a 60,000 line switch. As is shown on p. 4, which use data from Bell Atlantic's New York physical collocation tariff filing (modified to express the investments on a per line instead of a per amp basis), Bell Atlantic's own costs for power for a switch of this size are $19.24 per-line.

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Power Investment per Line
(based on 60,000 line office)

Line	Item	Source	Value
1	Microprocessor Plant (Buss Bar)	^ Line 2	$ 22,800
2	Rectifiers	^ Line 9	$ 62,280
3	Batteries	^ Line14	$ 98,500
4	Automatic Breaker	^ Line 17	$ 50,000
5	Power Distribution Service Cabinet	^ Line 20	$ 7,000
6	Emergency Engine	^ Line 27	$ 160,000
7	Power Plant Distribution Bay	^ Line 29	$ 20,000
8	Total Investment	Sum L1 - L 7	$ 420,580
9	Power Installation Favctor	^ Line 34	2.7450
10	In Place Investment	L8 * L9	$ 1,154,492
11	Number of Lines		60,000
12	Power Investment per Line	L10/L11	$ 19.24

Note: Sources preceded by a ^ are from 3/26/98 Physical Collocation filing in NY PSC Case 95-C-0657, Workpaper 1.0, Part A, Section1, Page 4 of 5, Column D

REDACTED

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CERTIFICATE OF SERVICE

I hereby certify that on this 6th day of August, 1999, copies of the forgoing "Reply Comments" were sent by first class mail, postage prepaid, to the parties on the attached list.

Jennifer L. Hoh

* Via hand delivery.

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